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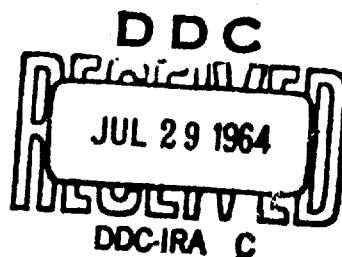


A Summary of the Final Report

# FAMILY ADOPTION OF PUBLIC FALLOUT SHELTERS

A Study of Des Moines, Iowa

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Joe M. Bohlen



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Iowa Agricultural and Home Economics Experiment Station  
Project No. 1529

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## INTRODUCTION

The Office of Civil Defense is conceptualized as a change agent whose goal is to have specified target audiences adopt new civil defense ideas, innovations, and programs. It is assumed that OCD as a change agent is interested in understanding and predicting how people will adopt new civil defense ideas. This involves a clear and detailed understanding of the factors related to the acceptance or rejection of these new ideas. The change agent may find insights about such factors to be important tools in planning, implementing, and evaluating present and future civil defense adoption programs.

## OBJECTIVE I: FRAMEWORK FOR ANALYSIS

The first objective of the report was to develop an analytical frame of reference which can be used for planning, implementing, and evaluating civil defense programs which have as their primary objective the obtaining of the adoption of new ideas, innovations, or programs by individuals in specified target audiences. The major concepts of the frame of reference are as follows: The Office of Civil Defense is perceived as a change agent. As a change agent one of its goals is to obtain adoption of its innovations. By innovation is meant an idea, practice, or product perceived as new by the individual or group for whom it is intended. The civil defense innovation which is of central concern to this report is the idea of using public fallout shelters if there is a nuclear attack. Adoption in this study is defined as the adoption of the idea of using a public fallout shelter if there is a nuclear attack. Thus, adoption in this study is symbolic adoption, i.e., the adoption of an idea, rather than behavior adoption. Almost all previous adoption research studies have focused on behavior adoption. Thus, the civil defense

innovation and adoption being studied in this report are different from most previous adoption studies. The adoption unit is the individual or group who has to make the decision to adopt an innovation. The adoption unit in this report is an individual (husband or wife) in a family household. The adoption process is the mental process through which an individual passes from first hearing about an innovation to its final adoption. Conceptually, the adoption process is usually referred to as an adoption model. The adoption process may be conceptually divided into five stages:

1. Awareness stage. At this stage the individual is initially exposed to the innovation. The individual knows of the innovation but lacks complete information about it. The individual may or may not be motivated to seek additional information about the innovation at this stage.
2. Information stage. The individual becomes interested in the innovation and seeks more information about it. In this stage the individual mainly increases his information about the innovation. The individual is interested in getting both general and more specific information about the intrinsic qualities of the innovation and relating this information to his past experiences and knowledge. At this stage he is building up a data base which will help him to decide whether or not he wishes to become further involved with the innovation.
3. Evaluation stage. The individual is concerned with applying the innovation to his own situation at this stage. The relative advantages and disadvantages of the innovation to other alternatives are considered. The individual makes a mental application of the innovation to his present and future situation and makes the decision either to try it or not. He is concerned with determining if adoption of this innovation will help him to maximize his goals to a greater degree than will any of the other alternatives which are perceived to be available to him.
4. Trial stage. At this stage the individual is motivated to use the innovation on a small scale in order to determine its utility in his own situation. When possible, most potential adopters use an innovation on a small experimental scale to test its applicability and compatibility to their situations.
5. Adoption stage. The individual adopts and decides to continue the full use of the innovation. At this stage and point in time the individual is satisfied that the course of action being pursued is best for him.

The adoption period is the time required for an individual to pass through the adoption process from awareness to adoption. The rate of adoption is the

relative speed with which an innovation is adopted by adoption units in the target audience. One of the goals of the change agent is to increase the rate of adoption of his innovation. One way to attempt this is to shorten the adoption period. Four categories of factors whose relationship to adoption have been studied are: demographic, knowledge, attitude, and sources of information. Knowledge of these four factors may be used by a change agent to effectively and efficiently shorten the adoption period and increase the rate of adoption of his innovation.

#### OBJECTIVE 2: ADOPTION OF PUBLIC FALLOUT SHELTERS

The second objective of the report was to determine the extent to which a sample of people has adopted the idea of using public fallout shelters if there is a nuclear attack. This innovation was selected for study because one of the major goals of civil defense during the past three years has been to develop a fallout shelter capability for all the people in the United States. The major activity to accomplish this goal has been the National Fallout Shelter Survey, Marking and Stocking Program. This program was designed to locate, mark, and stock existing facilities which would be used as public fallout shelters if needed. Logically flowing from these activities is the desire to have people make plans to use the shelters if there is a nuclear attack.

The five stage adoption process (awareness, information, evaluation, trial and adoption) was used as the basis for developing a series of questions which could be used to determine an individual or family's stage in the adoption of the idea of using public fallout shelters if there is a nuclear attack.

#### The research population and sample

The city of Des Moines, Iowa, was selected as a community in which to measure the public's adoption of the idea of using public fallout shelters.

Only husband and wife households were selected for study. Thus the statistical population for this study was the approximately 54,000 husband and wife households in Des Moines. A probability sample of households was selected for study. Husbands were interviewed in approximately one-half of the households and wives in the other one-half of the households. Whether a husband or wife was to be interviewed in a household was systematically determined by research design before the interviewer went to the household. A total of 246 interviews were completed during June and July of 1963.<sup>a</sup>

Using the questions based on the adoption model, respondents were classified into six analytical "stages" of adoption. The analytical adoption stages and the percent of respondents in each stage were as follows:

1. Unaware stage: approximately 13 percent of the sample respondents stated they were not aware of a public fallout shelter program. (This stage has been included in the analysis to account for all individuals in the study sample.)

2. Aware-Information stage: approximately 15 percent of the respondents stated they were aware, or were aware and had obtained additional information about the marking and stocking public fallout shelter program. (This analytical stage combines the individuals who were in the awareness and information stages. This was done because only a small number of individuals, 2.4 percent of the respondents, were in the awareness stage.)

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<sup>a</sup>Des Moines was one of the pilot and leading cities in stocking public fallout shelters at the time of the research study. Based on OCD data as of July 25, 1963, Des Moines had stocked 74,827 shelter spaces, capable to shelter over 23 percent of its population. As of that date only 18 of the 215 Standard Metropolitan Areas in the United States had stocked space for more than 20 percent of their 1960 population. And only three Standard Metropolitan Areas had stocked spaces for more than 28 percent of their 1960 population. Des Moines was one of these three.

3. Evaluation stage: fourteen percent of the respondents were in this stage.

(A trial stage was not included in the analysis since licenses signed by building owners do not allow the use of public fallout shelters except in a nuclear attack.)

4. Adoption type 1 - Downtown Adoption Only: approximately 19 percent of the respondents stated they would use a public fallout shelter if they were in a downtown business district and a nuclear attack occurred, but they stated they would not go to a public fallout shelter if they were at home with their family when a nuclear attack occurred.

5. Adoption type 2 - Home Adoption, No Plan: twenty-two percent of the respondents stated they had made the decision to use a public fallout shelter if they were at home with their family and an attack occurred, but they stated they did not have a specific plan of the steps they would take to get to a public fallout shelter.

6. Adoption type 3 - Home Adoption, Plan: approximately 17 percent of the respondents stated they had decided to use a public fallout shelter if they were at home with their family when an attack occurred and they also stated they have a specific plan of the steps they would take to get to a public fallout shelter.

Thus by mid-1963 almost 90 percent of the sample respondents stated they were aware of public fallout shelters. And approximately 17 percent stated they: (1) had decided to use a public fallout shelter if a nuclear attack occurred while they were at home with their family and (2) had a plan of the steps they would take to get to a public fallout shelter in this situation.

Approximately 23 percent of the respondents said they became aware of public fallout shelters during the last six months of 1961. Almost 40 percent

of the respondents said they became aware of public fallout shelters during the last half of 1962. Approximately two-thirds of the respondents who said they would go to a public fallout shelter and had a plan to get to it said they had decided to use a public fallout shelter during the last half of 1962.

#### OBJECTIVE 3: RELATION OF FACTORS TO STAGE OF ADOPTION

The third general objective of the research presented in the report was to determine the relationship between selected demographic, knowledge, attitude, and information variables an' the adoption of the innovation of using public fallout shelters if there is a nuclear attack. This objective attempted to provide answers to questions such as: what are the characteristics of people in each stage of adoption? Do people who are in the later stages of adoption have different characteristics (demographic, knowledge, attitudes, and sources of information) than individuals in the earlier stages of adoption? The individuals in the six analytical stages of adoption delineated above were compared on selected demographic, knowledge, attitude, and sources of information variables to determine relationships, if any, by stage of adoption. This research is one of the first attempts to determine variables which are related to the adoption of this type of civil defense innovation. Because of its exploratory nature, a large number of variables are used to determine which ones, if any, are related to stage of adoption of public fallout shelters. The reader should exercise caution in attributing causal effects when a relationship is stated. A statement of relationship does not necessarily mean a causal relationship. However, for many variables, theory, past research, or logical derivations do suggest a logic for inferring a causal relationship.

Demographic variables and stage of adoption

A knowledge of the relationship or lack of relationship between a demographic variable and stage of adoption should be helpful to civil defense change agents. Such an analysis makes it possible for the change agent to develop a profile of the people who have been motivated to adopt civil defense innovations and also to compare those people to those who have not yet been motivated to adopt civil defense ideas. These data may be used in planning and implementing future civil defense programs. Twelve demographic variables are related to stage of adoption. Two of the twelve demographic variables, years of formal education and home ownership, were found to be related to stage of adoption when formal statistical tests were used as the decision criteria of relationship. In general those more highly educated and owning their own home were more likely to have adopted the idea of using public fallout shelters. Three other variables approached a statistically significant relationship level (in the direction of a positive relationship). These were the number of people in the household under 15 years of age, active military service of husband, and membership in the National Guard. A weak percentage trend in the direction of a positive relationship was found between stage of adoption and higher family income. A weak percentage trend in the direction of a negative relationship was found between stage of adoption and age of the respondent. The remaining demographic variables had no apparent percentage relationship to stage of adoption: total number of people in household, combat duty, religious preference, political orientation, and sex of the respondent.

When one analyzes the 42 respondents in the Home Adoption Plan stage the following "profile" of the "adopter" is obtained. Eight out of ten "adopters" will have more than two people in their household. Seven out of ten "adopters" will have at least one child under 15 years of age. The "adopter" is younger

than the rest of the adult population. Two out of three "adopters" will have had some type of formal training beyond high school. The "adopter's" family income is only slightly above the average income. Three of every four "adopters" are home owners or in the process of buying a home. In two of every three "adopter" homes the husband has been in active military duty. One husband in five has been in combat. Approximately one husband in five has been a member of the National Guard.

#### Knowledge variables and stage of adoption

A knowledge of the relationship between an individual's knowledge of civil defense and his stage of public fallout shelter adoption should make it possible for the change agent to develop a knowledge profile of people who have adopted civil defense innovations and to compare these people to those who have not yet adopted civil defense innovations. A number of types of knowledge were found to be statistically related to stage of public fallout shelter adoption. In general, the more knowledge an individual had about civil defense, the farther along he was in his adoption process with respect to public fallout shelters. Four knowledge variables found to be statistically related (in a positive direction) to stage of adoption are: knowledge of a civil defense program in the United States; knowledge of a city (local) civil defense program; knowledge of the local civil defense director; and technical knowledge about fallout shelter and nuclear radiation. The technical knowledge variable consisted of nine specific knowledge items. When each of these specific knowledge items was compared to stage of adoption, five were found to be statistically related (in a positive direction) to stage of adoption. These five items are an individual's knowledge: (1) of a person's ability to survive exposure to radiation; (2) that radiation is not

contagious; (3) that you can filter dust out of the air to make the air safe to breathe; (4) that a pill will not protect you from fallout; and (5) that most fallout rapidly loses its power to harm people. The other four knowledge items had no apparent relationship to stage of adoption. These knowledge items are: (1) that a plastic suit with filtering mask does not offer protection from fallout, (2) that you can see fallout, (3) that shelters do not need an air-tight door to protect against fallout, and (4) that fallout covers thousands of square miles.

#### Attitude variables and stage of adoption

A knowledge of the relationship or lack of relationship between attitudes and stage of adoption should help civil defense change agents develop an attitude profile of the people who have been motivated to make civil defense decisions as well as profiles of people who have not yet been motivated to make civil defense decisions. It may also aid in constructing a logical rationale for present adoption behavior and help explain non-adoptive behavior. These data may also be of use in planning future civil defense programs. Thirty-five different attitude variables were compared to stage of public fallout shelter adoption. These attitude variables were categorized into six general attitude areas.

The first attitude area was the individual's perception of the situation in which he is making his civil defense decisions, that is, his perception of threat at the present time. Eight attitude variables were measured in this category. Of these eight, two (timing of war and thermonuclear war means the end of democracy) had a strong negative relation to stage of adoption, i.e., those thinking war was more imminent and believing most strongly thermonuclear war means the end of democracy were least likely to have adopted the idea of

using public fallout shelters. Two variables (likelihood of war and likelihood of local community death and destruction in war) had a minor negative relationship to stage of adoption, i.e., a larger proportion of individuals in the earlier stages of adoption perceived war and local community death and destruction being more likely. The variable concern about fallout had a slight positive relationship to stage of adoption. The remaining three variables (likelihood of conventional war, likelihood of war escalation, and likelihood of fallout danger in the local community) had no apparent relationship to stage of adoption.

The second attitude area consisted of nine variables measuring an individual's perception of the innovation, that is, fallout shelters. Five of the attitudes were highly related to stage of adoption when formal statistical tests were used as the criteria of relationship: in general, if an individual perceived that fallout shelters were like insurance, that all people should pay taxes for fallout shelters, and that a city sales tax was needed for public shelters he was more likely to be in the later stages of adoption; and if an individual perceived that we should not abandon a fallout shelter program and that shelter measures are not obsolete he was more likely to be in the later stages of adoption. Two attitudes indicated a slight relationship to stage of adoption: in general, if an individual perceived fallout shelters were desirable he was more likely to be in the later adoption stages; and if an individual perceived highway construction should not be curtailed for civil defense he was more likely in the later stages of adoption. Two attitudes (a public shelter program is worth its cost and future schools should have public fallout shelters) had no apparent relationship to stage of adoption.

The third attitude area was an individual's perception of the adequacy of civil defense. Two attitude variables were measured. Individuals in the

later stages of adoption more often perceived the local (city) civil defense program as adequate. Individual perceptions of the adequacy of the total (United States) civil defense program had no apparent relationship to stage of adoption.

The fourth attitude area consisted of four variables measuring an individual's perception of the government's role in civil defense. There was no apparent relationship between any of the four attitudes measured and stage of public fallout shelter adoption. The four attitudes were: Government should require people to prepare for a nuclear attack, federal government should increase civil defense activities, civil defense should be handled by the military, and government action indicated the need for civil defense.

The fifth attitude area measured an individual's perceptions of some general civil defense ideas. Two of the attitudes were statistically related to stage of adoption: in general if individuals believed civil defense was a waste of time and money they were more likely to be in the early stages of adoption and if they believed they had a community responsibility for civil defense they were more likely to be in the later stages of adoption. One attitude had a slight relation to stage of adoption: individuals in the later stages of adoption were slightly more favorable to the idea of encouraging their Congressmen to support civil defense. Two of the general civil defense attitudes, that civil defense encourages people to wage war and that civil defense in the United States has been too neglected, had no apparent relationship to stage of adoption.

The sixth attitude area measured an individual's perception of our government's policy concerning the use of nuclear weapons in seven decision situations. In four of the seven decision situations individuals in the early adoption stages were more prone to use nuclear weapons than individuals in

the latter stages of adoption. In the other three decision situations there were no apparent differences among adoption stages.

Sources of information and stage of adoption

A knowledge of the relationship between sources of civil defense information and stage of adoption should be helpful to civil defense change agents when evaluating present and planning future mass media and other public education programs. Following is a list of findings pertaining to sources of civil defense information.

1. Television news and television special programs, and daily or weekly newspapers were the most frequently named sources of civil defense information, followed by radio news and radio special programs, and booklets and pamphlets put out by the Office of Civil Defense.

2. Television news and television special programs were ranked as the most useful source of civil defense information.

3. Individuals in the latter stages of adoption indicated they had received civil defense information from more information sources than did individuals in the earlier stages of adoption.

4. More individuals in the latter stages of adoption indicated the use of government sources of information than did individuals in the earlier stages of adoption.

5. Almost all the individuals in each adoption stage obtained information from at least one mass media source of information.

6. A slightly larger number of individuals in the latter stages of adoption received information about civil defense in informal communication situations than did individuals in the earlier stages of adoption.

7. Only a small number of individuals in each adoption stage received information from commercial information sources.

8. Over two-thirds of the individuals in the study indicated a mass media source of civil defense as the most useful source to him.

9. More individuals in the later stages of adoption indicated using personal sources of information than did individuals in the earlier stages of adoption.

10. Over 80 percent of the individuals in each stage of adoption indicated that impersonal sources of civil defense information were most useful to them.

11. More individuals in the later stages of adoption stated they used technologically competent sources of information (as measured in this study) than did individuals in the earlier stages of adoption.

12. Individuals in the later stages of adoption said they used more technologically competent sources of information about civil defense (as measured in this study) than did individuals in the early stages of adoption.

13. Having actively sought information about civil defense is not statistically related to stage of adoption. However, more individuals in the latter stages of adoption stated they had sought civil defense information than did individuals in the earlier stages of adoption.

14. The feeling that one has adequate information on what to do in case of nuclear attack is statistically related to stage of public fallout shelter adoption. More individuals in the middle and latter adoption stages believe they have adequate information than do individuals in the earlier adoption stages.

The above data provide a profile of the individuals in the later stages of public fallout shelter adoption as well as those in the earlier adoption stages. These data may be used by OCD in planning and implementing future civil defense programs. One concern of OCD is to have people who have not yet

adopted the idea of using public fallout shelters to adopt the idea of using them. At what rate may individuals in the early adoption stages be expected, if at all, to adopt the idea of using public fallout shelters? Another concern of OCD may be the extent to which the adoption of this idea will persist in the mind of an individual over time. As was stated above the adoption of the idea of using public fallout shelters may be perceived as symbolic adoption. Will some people who are adopters at this point in time become non-adopters at a future point in time? What will the adoption stage profiles be if this occurs? There is a need for a periodic assessment of people's idea adoption so trends and patterns of symbolic adoption may be delineated and analyzed.